FIG. 1

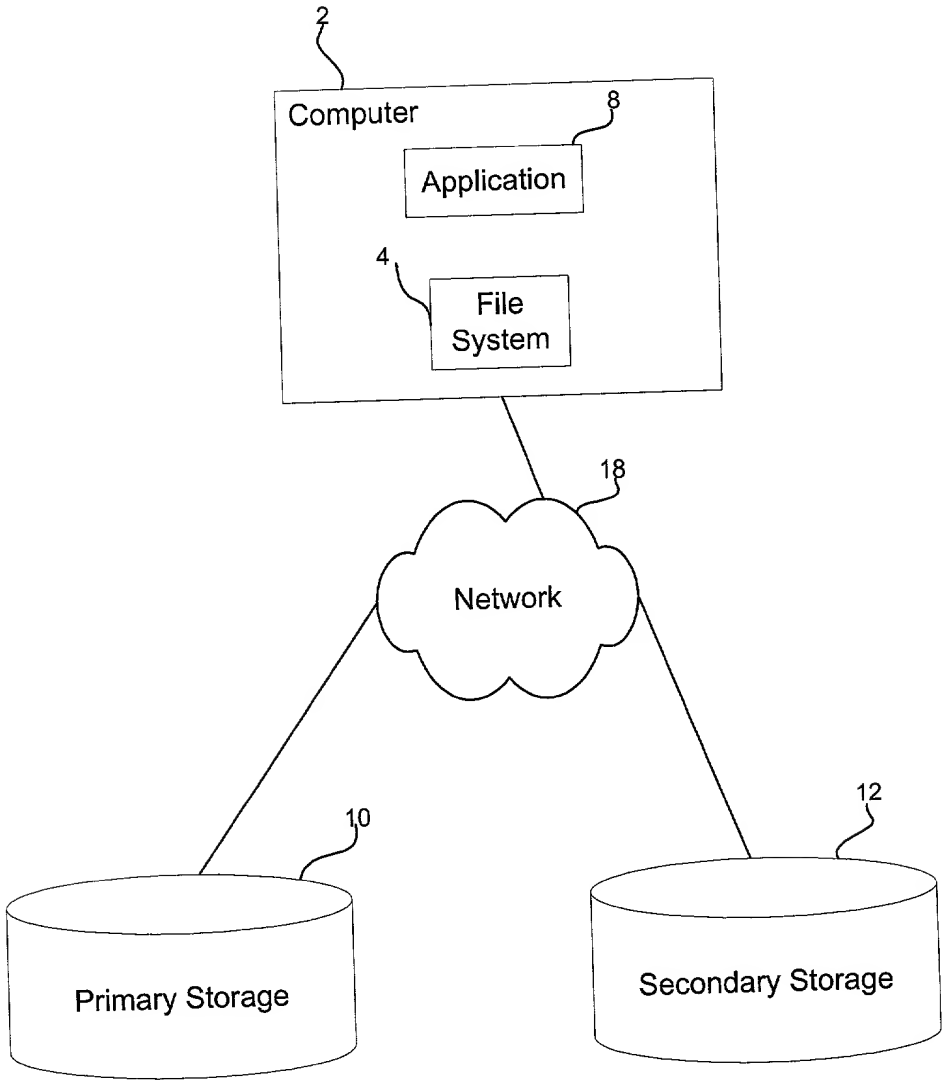

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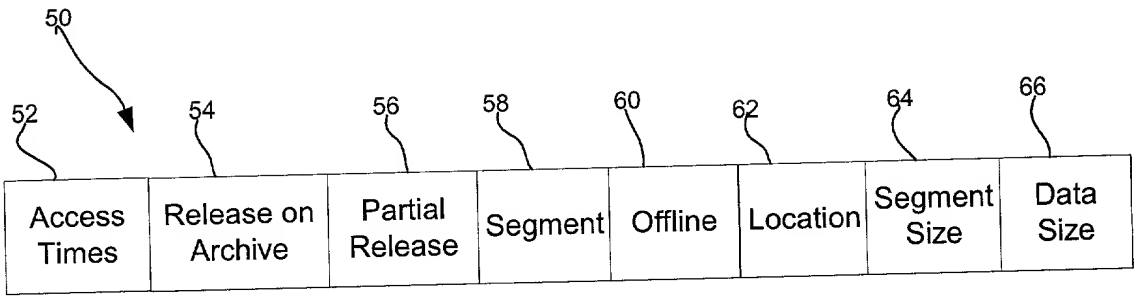
FIG. 2



File Metadata

FIG. 3

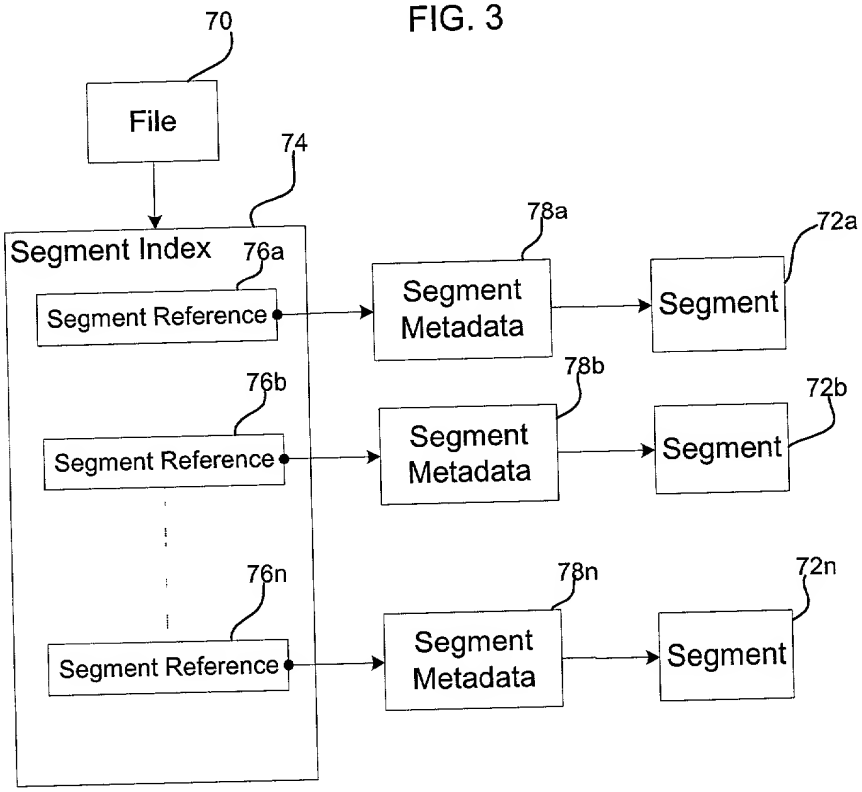


FIG. 4

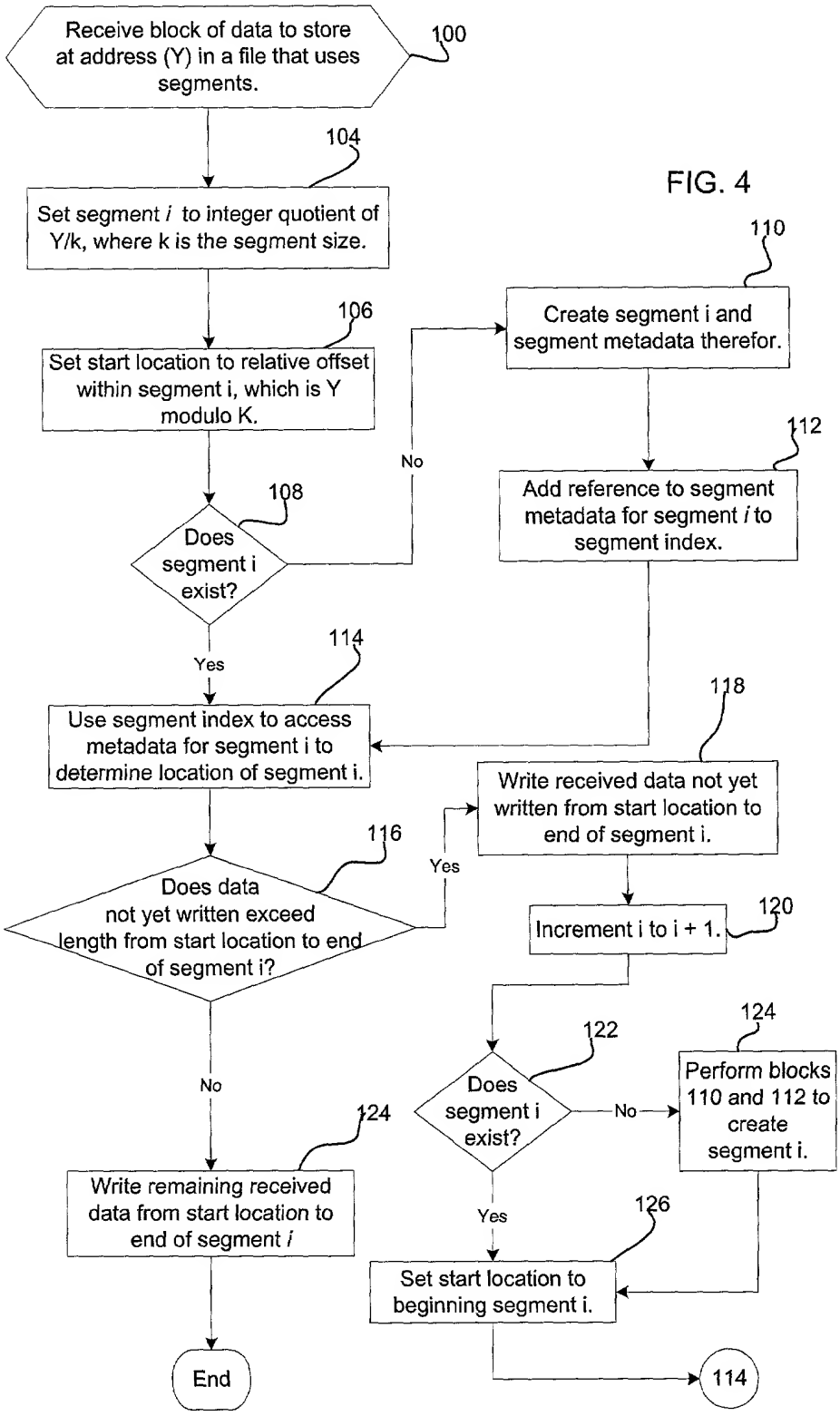

Receive block of data to store at address (Y) in a file that uses segments.
100
104
Set segment *i* to integer quotient of Y/k, where k is the segment size.
106
Set start location to relative offset within segment i, which is Y modulo K.
108
Does segment i exist?
No
Yes
110
Create segment i and segment metadata therefor.
112
Add reference to segment metadata for segment *i* to segment index.
114
Use segment index to access metadata for segment i to determine location of segment i.
116
Does data not yet written exceed length from start location to end of segment i?
Yes
No
118
Write received data not yet written from start location to end of segment i.
120
Increment i to i + 1.
122
Does segment i exist?
No
Yes
124
Perform blocks 110 and 112 to create segment i.
124
Write remaining received data from start location to end of segment *i*
126
Set start location to beginning segment i.
End
114

FIG. 5

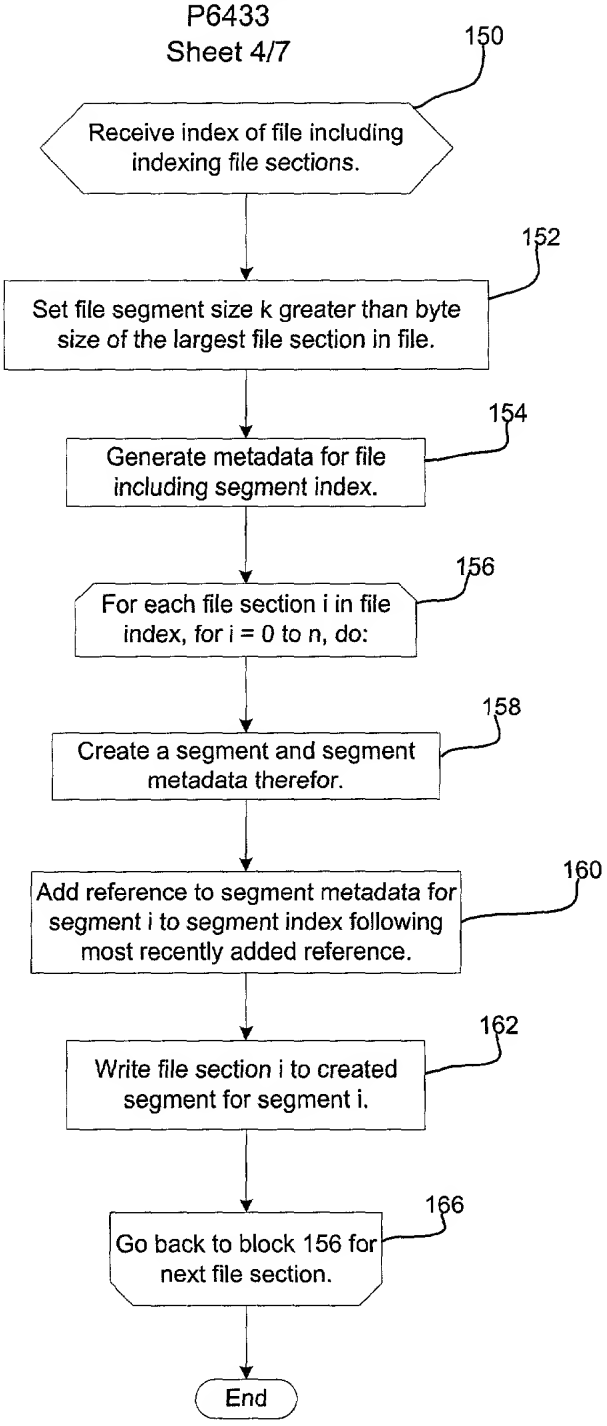


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FIG. 6a

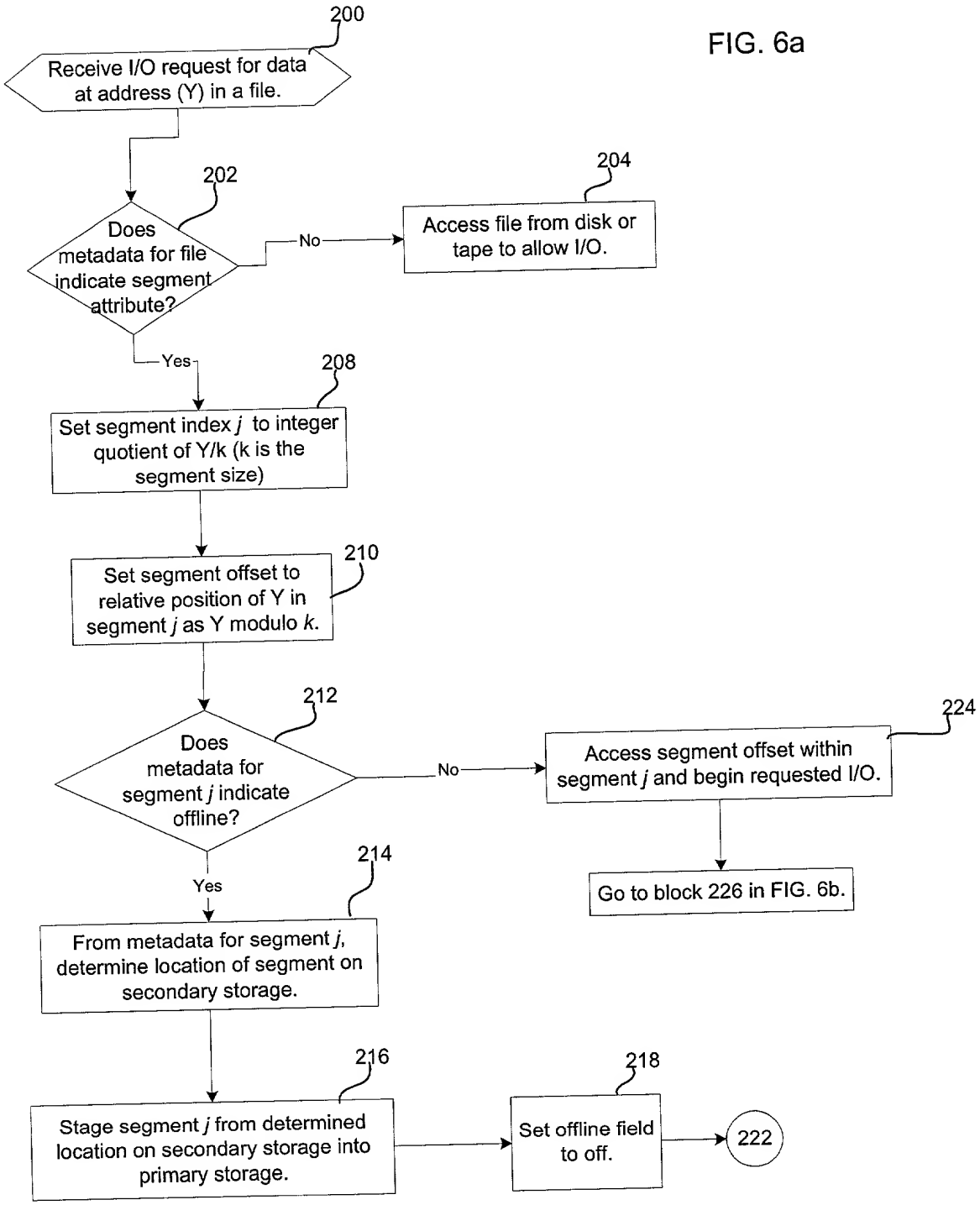
200
Receive I/O request for data at address (Y) in a file.
202
Does metadata for file indicate segment attribute?
No
204
Access file from disk or tape to allow I/O.
Yes
208
Set segment index j to integer quotient of Y/k (k is the segment size)
210
Set segment offset to relative position of Y in segment j as Y modulo k.
212
Does metadata for segment j indicate offline?
No
224
Access segment offset within segment j and begin requested I/O.
Go to block 226 in FIG. 6b.
Yes
214
From metadata for segment j, determine location of segment on secondary storage.
216
Stage segment j from determined location on secondary storage into primary storage.
218
Set offline field to off.
222

FIG. 6b

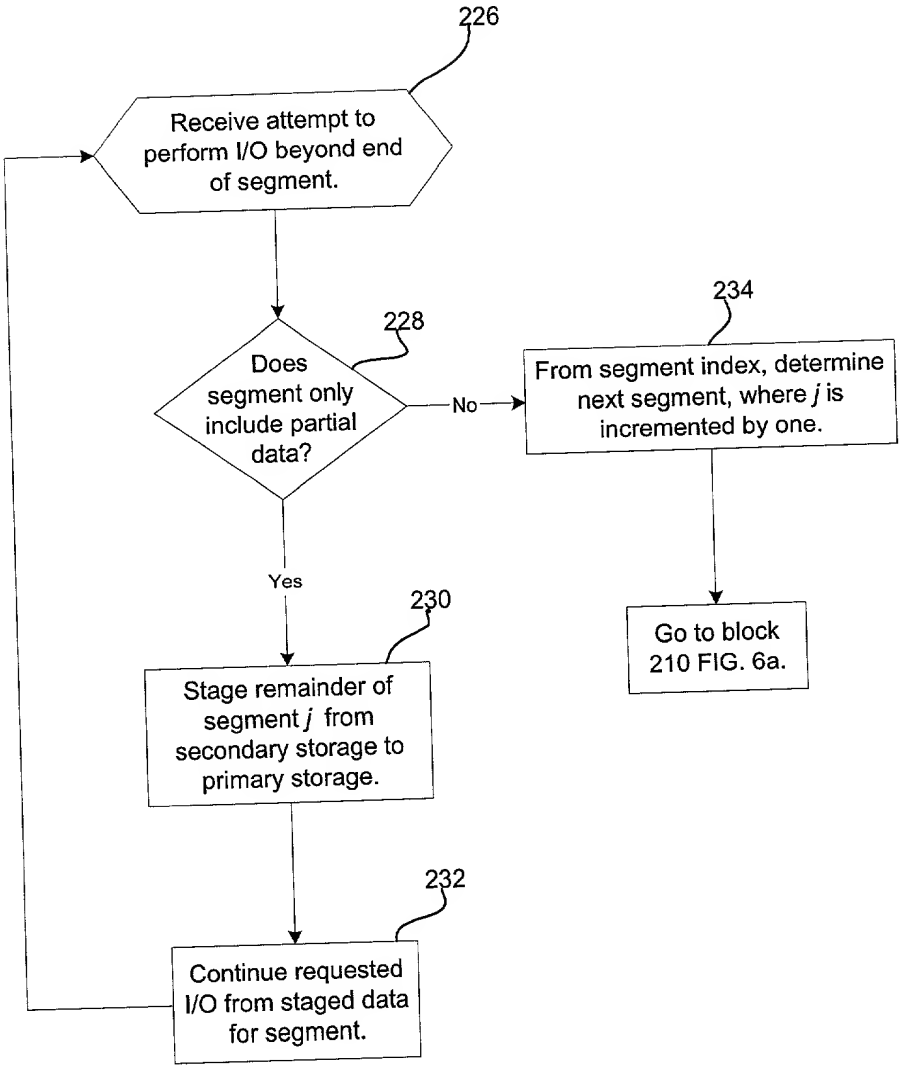

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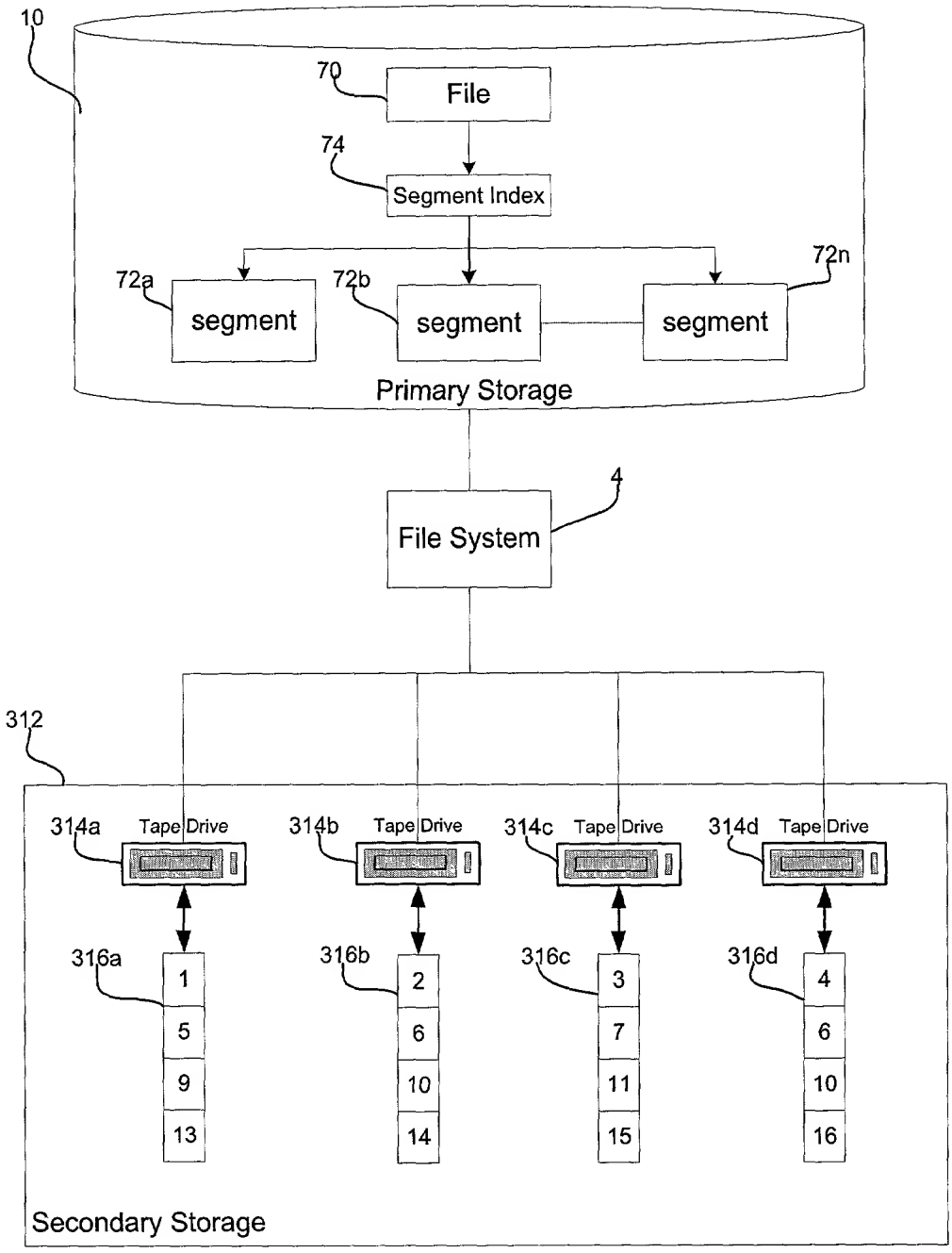
FIG. 7


10
70
File
74
Segment Index
72a
segment
72b
segment
segment
72n
Primary Storage
4
File System
312
314a
Tape Drive
314b
Tape Drive
314c
Tape Drive
314d
Tape Drive
316a
1
5
9
13
316b
2
6
10
14
316c
3
7
11
15
316d
4
6
10
16
Secondary Storage